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ORD-2733-66
6 July 1966

MEMORANDUM FOR: DD/ORD

SUBJECT : MBSD/ORD Support of the "I" and "O" Programs

1. Initially, the principal effort of ORD personnel should be directed toward encouraging the consolidation of all personnel records in the "I" and "O" programs. Once this has been done, a review should be held for the purpose of determining the feasibility of coding this information for computer based correlation studies. If such an analysis for one reason or another should prove impossible, the data should be examined for adequacy in fulfilling the operational requirements placed by the fly-and-try philosophy. In addition, as strong a case as possible should be made for the acquisition of simulator capabilities. ORD support of the "I" and "O" programs must be based on the view that these are the forerunners of still more sophisticated and demanding programs. It may be argued that a simulator-based medical and behavioral support program in which all records are consolidated and subjected to analysis will, in addition to strengthening the present programs, prove invaluable in defining the operational limitations of future programs.

2. The philosophy of fly-and-try stands a good chance of being a very expensive luxury. Under these conditions the data are accumulated operationally without benefit of controls. The significant aspects of such a program are failure oriented. The high cost of aircraft and support facilities and the great potential value of the information to be acquired permits the argument that one failure, representing one bit of information, will exceed the cost of an elaborate simulator. The total cost of the prolongation of this philosophy is a matter of speculation.

3. If the fly-and-try philosophy is continued, a framework should be established around which a special study group may be organized for the purpose of determining and evaluating the cause of failure and/or inadequate performance. Should pilot error prove to be a cause, this study group shall function in determining the factors which contributed to the pilot error. A historical review of past performance in these programs will prove useful in specifying the information which must be acquired for this group to come to a decision. Findings will be incorporated into active training procedures to compensate and correct the cause of failure.

4. If a simulator is built, or the use of the Blue-O-Simulator is acquired, a wide spectrum of mission-oriented studies will be possible, i.e., basic performance and endurance norms may be established for the

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purpose of defining mission limitations, etc. The use of a simulator will not preclude the fly-and-try approach since there is no substitute for a live mission. Instead, the simulator will provide a controlled data base upon which judgments concerning operational performance may be based. Within this context, the "I" and "O" programs share many of the attributes of the polygraph program and may be studied in much the same way. However, the number of subjects is expected to be too small and the volume of data is expected to be too large to permit such an analytical program. Analytical approaches other than those used in the polygraph program should be explored as soon as sufficient information becomes available.

5. Full exploitation of the results of a simulator program requires the acquisition of some performance data during the live mission to aid in correlating simulator results with mission performance. In order to implement such a goal, on-board data acquisition, processing and storage capability may be required. Weight and volume limitations are known to restrict the magnitude of this effort severely. However, recent advances in electronics indicate the feasibility of meeting these restrictions. It is possible, therefore, to consider a design specification program in anticipation of the inclusion of on-board monitoring. The design of such a system should be directed primarily toward the monitoring and analysis of performance. Physiological monitoring during the live mission should be de-emphasized until the value of such indicators in predicting performance decrement has been demonstrated.

6. Whatever training philosophy is chosen as most feasible, an integral and necessary portion of this effort should be the generation of a data base in a form that can be subjected to substantive analysis. The data base should begin with preliminary selection phases, continue through final selection and training up to and including mission simulation. This would permit a comprehensive analysis of the whole system (i.e., mission analysis) and should prove valuable in identifying critical factors which may be predictive of pilot performance.

7. The attached charts, following the breakdown of problem areas as presented by [redacted] list the initial suggestions concerning the possible contributions of MBSD/ORD to the "I" and "O" programs.

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Attachments:
Charts

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